

REMARKS/ARGUMENTS

The Office Action (1) rejected claim 24 under 35 U.S.C. § 102(e) as being unpatentable by Pang et al. (U.S. Patent No. 6,517,634); and (2) rejected claims 25 and 1-9 under 35 U.S.C. § 103(a) as being unpatentable over Pang et al., in view of Kamikawa et al. (U.S. Patent No. 6,413,355) and Lei et al. (U.S. Patent No. 6,050,446).

1. With regard to the rejection of claim 24 under 35 U.S.C. § 102(e) as being unpatentable by Pang et al., Applicants submit that the present invention system provides a chamber lid that can move horizontally in a substantially parallel manner relative to the opening, in contrast to Pang et al.'s disclosure where the chamber lid rotates via a dual pivot hinge assembly.

It is recognizable that a lid, when rotating into a closed position, unevenly contacts the o-ring seal beginning from the back of the chamber to the front of the chamber. As a result, the o-ring seal is subjected to pinching, nicking and abrasion (Pang et al., col. 1, lines 47-53).

Recognizing this problem, and also the available prior art solutions, such as a floating pivot lid assembly that allows the lid to float above the chamber (Pei et al.), or employing a piston to reduce the force of the lid (Pang et al.), the subject application discloses another solution to the o-ring pinching problem by a cam dual pivot assembly.

However, one basic manifestation of the o-ring pinching problem is the rotation of the lid assembly, resulting in a side force acting on the o-ring. The o-ring pinching problem would disappear if the lid closed straight down instead of rotationally. Thus, the present invention addresses the o-ring pinching problem by moving the lid down horizontally in a substantially parallel manner relative to the chamber.

Applicants submit that Pang et al. fails to teach or suggest an element of the claim 24 of the present invention, namely, the horizontal movement of the lid substantially parallel to the chamber opening to solve the o-ring pinching problem. Thus, Applicants submit that the present invention is patentable over Pang et al.

2. Regarding the rejection of claims 25 and 1-9 under 35 U.S.C. § 103(a) as being unpatentable by Pang et al., in view of Kamikawa et al. and Lei et al., Applicants submit that all of the cited prior art references do not disclose the floating pivot of the present invention.

The problem of o-ring pinching occurs due to the side force upon the o-ring. If this force is perfectly perpendicular to the chamber opening, the o-ring pinching problem disappears. Thus, one basic early solution is to bring the lid close to the chamber opening and then lower the lid perfectly perpendicularly down. For opening, the lid is lifted up before being brought sideways.

This is the approach employed in Kamikawa et al. As shown in Fig. 8, the lid 63 is opened by lifting up (arrow ①), then moving out (arrow ②), and dropping down (arrow ③). For closing, the sequence is reversed: the lid is lifted up (arrow ③), then moved in (arrow ②), and dropped down (arrow ①). The movement ① essentially eliminates the o-ring pinching problem. The major draw back of this basic early approach is the need for two moving mechanisms: one mechanism 69 to lift up and down, and one mechanism 68 to move sideways.

In contrast, the present invention employs only one actuator mechanism to move the lid between the open and closed positions with a similar operating principle. Applicants submit that for two movement mechanisms, as disclosed by Kamikawa et al., there is no need for automatic alignment since the operation of the up/down mechanism can be arranged perfectly perpendicular to the chamber body. Thus, Applicants submit that Kamikawa et al. does not use a floating pivot for automatic alignment, as evidenced by Kamikawa et al.'s silence with respect to a floating pivot, and, further, by the operating principle of two movement mechanisms employed by Kamikawa et al., leaving no need for a floating pivot.

In contrast, the present invention employs only one operating mechanism by combining the up/down movement with the sideways movement, and, therefore, would not provide the perfectly perpendicular movement up and down, and, thus, a floating pivot is employed for automatic alignment.

In sum, Applicants submit that Pang et al. and Lei et al. employ a lid using rotational movement instead of horizontally parallel movement, and Kamikawa et al. employs two movement mechanisms which does not need a floating pivot. Further, the cited prior art of Pang et al., Lei et al. and Kamikawa et al., are silent with respect to the floating pivot disclosed by the

present invention. Thus, Applicants submit that the present invention chamber lid using horizontally parallel movement and a floating pivot for automatic alignment is patentable over all art of record.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Date: _____

6/28/5

Respectfully submitted,

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